

Listing of Claims

1. (previously presented) An image processing apparatus which sequentially processes graphic rendering instructions for image data, said graphic rendering instructions including first and second graphic rendering instructions, said first graphic rendering instruction being input immediately preceding said second graphic rendering instruction, said first graphic rendering instruction containing first rendering data representing a first original image to render a first output image, said second graphic rendering instruction containing second rendering data representing a second original image to render a second output image, said first original image being overlaid by said second original image, said image processing apparatus comprising:

an overlay detector configured to perform an overlay detection to detect an overlay of the first and second original images which are rendered based on the first and second rendering data by the first and second rendering instructions, respectively; and

a memory storing the first rendering data contained in the first graphic rendering instruction,

wherein the overlay detector specifies a portion of the first original image to be overlaid by the second original image upon detecting an overlay of the first and second original images, deletes a specified portion and draws a third output image, based on the original images, in which the specified portion of the first original image is deleted and stores the second rendering data into the memory.

2. (original) The image processing apparatus as defined in Claim 1, wherein said graphic rendering instructions are configured to be a page description language and each of said graphic rendering instructions are configured to include a fundamental graphic description instruction

which handles characters, graphics and images and a rendering attribute instruction handling colors, clipping area designations and rendering arithmetic methods.

3. (original) The image processing apparatus as defined in Claim 1, wherein said graphic rendering instructions are configured to be converted into at least one of intermediate data represented by coordinate information and a PDL language.

4. (previously presented) The image processing apparatus as defined in Claim 1, wherein each of the first and second original images is configured to include at least one of a rectangle figure and a run aggregate figure.

5. (previously presented) The image processing apparatus as defined in Claim 4, wherein the overlay detector performs the overlay detection each run when the overlay detector detects an overlay of the run aggregate figures.

6. (previously presented) The image processing apparatus as defined in Claim 4, wherein when the overlay detector detects an overlay of the run aggregate figures, the overlay detector generates a circumscribing rectangle for the run aggregate figure of the first and second original images and, after the overlay detector detects an overlay between the circumscribing rectangle for the run aggregate figure for the first and second original images, determines the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle.

7. (previously presented) The image processing apparatus as defined in Claim 6, wherein the overlay detector is configured to determine whether, for the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle, to perform the overlay detection for each run.

8. (original) The image processing apparatus as defined in Claim 1, wherein the second output image is configured to be overwritten on the third output image.

9. (original) The image processing apparatus as claimed in Claim 8, wherein the first and second output image are configured to be drawn with a rendering process based on at least one of a mono chrome, an RGB video color rendering, and a CMYK paint color rendering.

10. (previously presented) An image processing apparatus which sequentially processes graphic rendering instructions for image data, said graphic rendering instructions including first and second graphic rendering instructions, said first graphic rendering instruction being input immediately preceding said second graphic rendering instruction, said first graphic rendering instruction containing first rendering data representing a first original image to render a first output image, said second graphic rendering instruction containing second rendering data representing a second original image to render a second output image, said first original image being overlaid by said second original image, said image processing apparatus comprising:

overlay detecting means for performing an overlay detection to detect an overlay of the first and second original images which are rendered based on the first and second rendering data by the first and second rendering instructions, respectively; and

a memory storing the first rendering data contained in the first graphic rendering instruction,

wherein the overlay detecting means detects a portion of the first original image to be overlaid by the second original image upon detecting an overlay of the first and second original images, deletes a specified portion and draws a third output image, based on the first original image, in which the specified portion of the first original image is deleted and stores the second rendering data into the memory.

11. (original) The image processing apparatus as defined in Claim 10, wherein said graphic rendering instructions are a page description language and each of said graphic rendering instructions includes a fundamental graphic description instruction which handles characters, graphics and images and a rendering attribute instruction handling colors, clipping area designations and rendering arithmetic methods.

12. (original) The image processing apparatus as defined in Claim 10, wherein said graphic rendering instructions are converted into at least one of intermediate data represented by coordinate information and a PDL language.

13. (previously presented) The image processing apparatus as defined in Claim 10, wherein each of the first and second original images includes at least one of a rectangle figure and a run aggregate figure.

14. (original) The image processing apparatus as defined in Claim 13, wherein the

overlay detection means performs the overlay detection by each run when the overlay detection means detects an overlay of the run aggregate figures.

15. (previously presented) The image processing apparatus as defined in Claim 13, wherein when the overlay detecting means detects an overlay of the run aggregate figures, the overlay detecting means generates a circumscribing rectangle for the run aggregate figure of the first and second original images and, after the overlay detecting means detects an overlay between the circumscribing rectangle for the run aggregate figure for the first and second original images, determines the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle.

16. (previously presented) The image processing apparatus as defined in Claim 15, wherein the overlay detecting means determines whether the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle, and the overlay detection is performed for each run.

17. (original) The image processing apparatus as defined in Claim 10, wherein the second output image is overwritten in the third output image.

18. (original) The image processing apparatus as claimed in Claim 15, wherein the first and second output image are drawn with a rendering process based on at least one of a mono chrome, an RGB video color rendering, and a CMYK paint color rendering.

19. (previously presented) An image processing method which sequentially processes graphic rendering instructions for image data, said graphic rendering instructions including first and second graphic rendering instructions, said first graphic rendering instruction being input immediately preceding said second graphic rendering instruction, said first graphic rendering instruction containing first rendering data representing a first original image to render a first output image, said second graphic rendering instruction containing second rendering data representing a second original image to render a second output image, said first original image being overlaid by said second original image, said image processing method comprising the steps of:

performing an overlay detection to detect an overlay of the first and second images which are rendered based on the first and second rendering data by the first and second rendering instructions, respectively; and

storing the first rendering data contained in the first graphic rendering instruction, wherein the overlay detecting methods specifies a portion of the first original image to be overlaid by the second original image upon detecting an overlay of the first and second original images, deletes a specified portion and draws a third output image, based on the first original image, in which the specified portion of the first original image is deleted and stores the second rendering data into the memory.

20. (original) The image processing method as defined in Claim 19, wherein said graphic rendering instructions are a page description language and each of said graphic rendering instructions includes a fundamental graphic description instruction which handles characters, graphics and images and a rendering attribute instruction handling colors, clipping area

designations and rendering arithmetic methods.

21. (original) The image processing method as defined in Claim 19, wherein said graphic rendering instructions are converted into at least one of intermediate data represented by coordinate information and a PDL language.

22. (previously presented) The image processing method as defined in Claim 19, wherein each of the first and second original images includes at least one of a rectangle figure and a run aggregate figure.

23. (original) The image processing method as defined in Claim 22, wherein the overlay detection step performs the overlay detection by each run when the overlay detection step detects an overlay of the run aggregate figures.

24. (previously presented) The image processing method as defined in Claim 22, wherein when the overlay detection step detects an overlay of the run aggregate figures, the overlay detection step generates a circumscribing rectangle for the run aggregate figure of the first and second original images and, after the overlay detection detects an overlay between the circumscribing rectangle for the run aggregate figure for the first and second original images, determines the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle.

25. (previously presented) The image processing method as defined in Claim 24,

wherein the overlay detection determines whether the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle, and performs the overlay detection for each run.

26. (original) The image processing method as defined in Claim 19, wherein the second output image is overwritten in the third output image.

27. (original) The image processing method as claimed in Claim 24, wherein the first and second output image are drawn with a rendering process based on at least one of a mono chrome, an RGB video color rendering, and a CMYK paint color rendering.

28. (previously presented) A printing apparatus which sequentially processes graphic rendering instructions for image data, said graphic rendering instructions including first and second graphic rendering instructions, said first graphic rendering instruction being input immediately preceding said second graphic rendering instruction, said first graphic rendering instruction containing first rendering data representing a first original image to render a first output image, said second graphic rendering instruction containing second rendering data representing a second original image to render a second output image, said original first image being overlaid by said second original image, said printing apparatus comprising:

overlay detecting means for performing an overlay detection to detect an overlay of the first and second original images which are rendered based on the first and second rendering data by the first and second rendering instructions, respectively; and

a memory storing the first rendering data contained in the first graphic rendering

instruction,

wherein the overlay detecting means specifies a portion of the first original image to be overlaid by the second original image upon detecting an overlay of the first and second original images, deletes a specified portion and draws a third output image, based on the first original image, in which the specified portion of the first original image is deleted and stores the second rendering data into the memory.

29. (original) The printing apparatus as defined in Claim 28, wherein said graphic rendering instructions are a page description language and each of said graphic rendering instructions includes a fundamental graphic description instruction which handles characters, graphics and images and a rendering attribute instruction handling colors, clipping area designations and rendering arithmetic methods.

30. (original) The printing apparatus as defined in Claim 28, wherein said graphic rendering instructions are converted into at least one of intermediate data represented by coordinate information and a PDL language.

31. (previously presented) The printing apparatus as defined in Claim 28, wherein each of the first and second original images includes at least one of a rectangle figure and a run aggregate figure.

32. (original) The printing apparatus as defined in Claim 31, wherein the overlay detection means performs the overlay detection by each run when the overlay detection means

detects an overlay of the run aggregate figures.

33. (previously presented) The printing apparatus as defined in Claim 31, wherein when the overlay detecting means detects an overlay of the run aggregate figures, the overlay detecting means generates a circumscribing rectangle for the run aggregate figure of the first and second original images and, after the overlay detecting means detects an overlay between the circumscribing rectangle for the run aggregate figure for the first and second original images, determines whether the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle.

34. (previously presented) The printing apparatus as defined in Claim 33, wherein the overlay detecting means determines the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle, and the overlay detection is performed for each run.

35. (original) The printing apparatus as defined in Claim 28, wherein the second output image is overwritten in the third output image.

36. (original) The printing apparatus as claimed in Claim 33, wherein the first and second output image are drawn with a rendering process based on at least one of a mono chrome, an RGB video color rendering, and a CMYK paint color rendering.

37. (previously presented) A host PC which sequentially processes graphic rendering

instructions for image data, said graphic rendering instructions including first and second graphic rendering instructions, said first graphic rendering instruction being input immediately preceding said second graphic rendering instruction, said first graphic rendering instruction containing first rendering data representing a first original image to render a first output image, said second graphic rendering instruction containing second rendering data representing a second original image to render a second output image, said first original image being overlaid by said second original image, said host PC comprising:

overlay detecting means for performing an overlay detection to detect an overlay of the first and second original images which are rendered based on the first and second rendering data by the first and second rendering instructions, respectively; and

a memory storing the first rendering data contained in the first graphic rendering instruction,

wherein the overlay detecting means specifies a portion of the first original image to be overlaid by the second original image upon detecting an overlay of the first and second original images, deletes a specified portion and draws a third output image, based on the first original image, in which the specified portion of the first original image is deleted and stores the second rendering data into the memory.

38. (original) The host PC as defined in Claim 37, wherein said graphic rendering instructions are a page description language and each of said graphic rendering instructions includes a fundamental graphic description instruction which handles characters, graphics and images and a rendering attribute instruction handling colors, clipping area designations and rendering arithmetic methods.

39. (original) The host PC as defined in Claim 37, wherein said graphic rendering instructions are converted into at least one of intermediate data represented by coordinate information and a PDL language.

40. (previously presented) The host PC as defined in Claim 37, wherein each of the first and second original images includes at least one of a rectangle figure and a run aggregate figure.

41. (original) The host PC as defined in Claim 40, wherein the overlay detection means performs the overlay detection by each run when the overlay detection means detects an overlay of the run aggregate figures.

42. (previously presented) The host PC as defined in Claim 40, wherein when the overlay detecting means detects an overlay of the run aggregate figures, the overlay detecting means generates a circumscribing rectangle for the run aggregate figure of the first and second original images and, after the overlay detecting means detects an overlay between the circumscribing rectangle for the run aggregate figure for the first and second original images, determines the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle.

43. (previously presented) The host PC as defined in Claim 42, wherein the overlay detecting means determines the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle, and

the overlay detection is performed for each run.

44. (original) The host PC as defined in Claim 37, wherein the second output image is overwritten in the third output image.

45. (original) The host PC as claimed in Claim 42, wherein the first and second output image are drawn with a rendering process based on at least one of a mono chrome, an RGB video color rendering, and a CMYK paint color rendering.

46. (previously presented) An image forming apparatus which sequentially processes graphic rendering instructions for image data, said graphic rendering instructions including first and second graphic rendering instructions, said first graphic rendering instruction being input immediately preceding said second graphic rendering instruction, said first graphic rendering instruction containing first rendering data representing a first original image to render a first output image, said second graphic rendering instruction containing second rendering data representing a second original image to render a second output image, said first original image being overlaid by said second original image, said image forming apparatus comprising:

overlay detecting means for performing an overlay detection to detect an overlay of the first and second original images which are rendered based on the first and second rendering data by the first and second rendering instructions, respectively; and

a memory storing the first rendering data contained in the first graphic rendering instruction,

wherein the overlay detecting means specifies a portion of the first original image to be

overlaid by the second original image upon detecting an overlay of the first and second original images, deletes a specified portion and draws a third output image, based on the first original image, in which the specified portion of the first original image is deleted and stores the second rendering data into the memory.

47. (original) The image forming apparatus as defined in Claim 46, wherein said graphic rendering instructions are a page description language and each of said graphic rendering instructions includes a fundamental graphic description instruction which handles characters, graphics and images and a rendering attribute instruction handling colors, clipping area designations and rendering arithmetic methods.

48. (original) The image forming apparatus as defined in Claim 46, wherein said graphic rendering instructions are converted into at least one of intermediate data represented by coordinate information and a PDL language.

49. (previously presented) The image forming apparatus as defined in Claim 46, wherein each of the first and second original images includes at least one of a rectangle figure and a run aggregate figure.

50. (original) The image forming apparatus as defined in Claim 49, wherein the overlay detection means performs the overlay detection by each run when the overlay detection means detects an overlay of the run aggregate figures.

51. (previously presented) The image forming apparatus as defined in Claim 49, wherein when the overlay detecting means detects an overlay of the run aggregate figures, the overlay detecting means generates a circumscribing rectangle for the run aggregate figure of the first and second original images and, after the overlay detecting means detects an overlay between the circumscribing rectangle for the run aggregate figure for the first and second original images, determines the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle.

52. (previously presented) The image forming apparatus as defined in Claim 51, wherein the overlay detecting means determines the run aggregate figure included in the run aggregate figure of an overlaid portion between the first and second original images of the circumscribed rectangle, and the overlay detection is performed for each run.

53. (original) The image forming apparatus as defined in Claim 46, wherein the second output image is overwritten in the third output image.

54. (original) The image forming apparatus as claimed in Claim 51, wherein the first and second output image drawn with a rendering process based on at least one of a mono chrome, an RGB video color rendering, and a CMYK paint color rendering.